

**USAID's Pest and Pesticide Management Project**  
**Achievements and Impacts**  
(October 1995 to July 1999)

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**Pest and Pesticide Management Project (PPMP)**

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# **USAID's Pest and Pesticide Management Project**

## **Achievements and Impacts**

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implemented by

**Office of International Research and Development (OIRD)**  
**Virginia Polytechnic Institute and State University (Virginia Tech)**

The Pest and Pesticide Management Project (PPMP) is a U.S.-Ukraine collaborative project implemented by Virginia Tech under contract to the United States Agency for International Development. Since 1995, the PPMP has had as its objectives to increase the productivity and safety of plant protection through the demonstration and transfer of integrated pest management (IPM) practices, the proper handling, transport and use of agro-chemicals, pesticide registration management techniques, regulatory approaches, and risk reduction techniques that are currently being practiced in the United States and other countries.

In order to achieve these objectives, Virginia Tech has:

1. Established an Pest and Pesticide Management Office in Kyiv to coordinate IPM and Pesticide Safety activities both nationally and at the oblast level;
2. Provided a three-week study tour and training of trainers program for three oblast IPM and Pesticide Safety Training Teams (Dnipropetrovsk, L'viv, and Odessa). Study Tour participants included 9 women and 7 men from a variety of specializations. This Study Tour and Training Program involved an introduction to the Pesticide Applicator Safety Training Programs of three U.S. land grant universities (Virginia Tech, Penn State, and Ohio State) and an introduction to the latest IPM technologies and practices provided by faculty participating in the Virginia Tech-managed IPM CRSP;
3. Supported combined teams of Ukrainian and American IPM scientists who conducted 15 5-day training workshops for private farmers, local agricultural specialists and officials in the three oblasts. The structure and content of these training programs was developed based on findings of 5-day Participatory Appraisals conducted in each of the three oblasts. This activity

provided an opportunity for on-the-job training for Ukrainian IPM scientists who for the first time experienced direct farmer/scientist dialog over issues important to both. Fourteen American faculty from Virginia Tech, Ohio State, Pennsylvania State, and Purdue Universities collaborated with fourteen Ukrainian scientists from the State Agricultural Universities of Dnipropetrovsk, Odessa, and L'viv, the Grain Crops Institute, the Institute of Agriculture and Animal Husbandry, Odessa State University, Odessa Institute of Biotechnology, and the Plant Protection Station of L'viv and Odessa Oblasts. This cross-institutional and international synergy produced a dynamic set of new IPM and Pesticide Safety training materials adapted to the farming circumstances in each of the three oblasts.

As a consequence of this training program 710 people received training (men outnumbered women by three to one) and were officially certified as Pesticide Applicators.

4. Virginia Tech has also facilitated the establishment of the Ukrainian Crop Protection Association (UCPA) to improve pesticide stewardship, pesticide safety and government regulation of industry. Rising from a total of 22 companies at its official inauguration, 49 companies have joined the UCPA (15 foreign and 34 domestic). Despite burdensome red tape and irritating delays, members have begun to stand together to accomplish their mutual goals. The UCPA is representing the pesticide industry's business interests before key government policy makers and taking leadership as a "good citizen" in setting pesticide industry safety standards.
5. Established six collaborative research projects involving eight U.S. and thirteen Ukrainian scientists focusing on IPM systems for wheat, tomato, potatoes, and apples, as well as how the Plant Protection Stations can improve their services to privatized farming enterprises.

## **Impacts due to Virginia Tech's Implementation of the PPMP**

### Training

- Training activities initiated by the PPMP Training of Trainers program are continuing. Trainers work on teams or in individual efforts. One NGO-based IPM and Pesticide Safety Training Team has conducted an additional 17 training courses for over 660 persons since direct PPMP funding ceased. Other trainer's have developed roles as farmer consultants or provided leadership for training teams sponsored by other donors.
- The Ukrainian version of Virginia Tech's "Using Pesticides Safely" manuel was the centerpiece of the PPMP training program. It is in high demand (fourth printing) and in common use throughout Ukraine. This is part of an increasing demand by the farming population for quality information concerning IPM and pesticide safety.
- Pesticide Applicator certification by the Plant Protection Stations has been renewed in oblasts where these training services are being provided.

### Institutional Strengthening

- Plant Protection Service is adapting itself to the new market environment and addressing the information needs of farmers (both CAEs and individual private farmers) for improving their farming practices and for increasing their safe use of pesticides.
- A market for Integrated Pest Management and Pesticide Safety Information Services has been created. This can be seen in the increasing demand for crop-specific pest and pesticide management brochures developed by the L'viv Plant Protection Station in collaboration with Ukrainian and American researchers.
- The Ukrainian Crop Protection Association (UCPA) is lobbying government for market reforms in agriculture.
- The Law on Plant Protection has been adopted which improves regulation of pesticide application and safety.

#### Research

- New Integrated Pest Management techniques and practices are being developed, tested and promoted through collaborative research.
- Ukrainian agricultural researchers are submitting higher quality market-oriented research proposals.

## **Synopsis of Collaborative Research Projects**

***Development of Integrated Production Systems for Wheat That Provide Stable Phytosanitary Conditions.*** Co-Principal Investigators: E. Dudka, N. Pinchuk, K. Sepeta, T. Satarova, Institute for Grain Growing of the Ukrainian Science Academy of Agriculture, Dnipropetrovsk; and Patrick Lipps, Ohio State University.

Growing conditions were generally dry and hot during 1998 which lead to considerable plant stress and moderate yields. Experiments demonstrated that high seeding rates and higher levels of nitrogen fertilization increased disease incidence, but not necessarily severity. The increased disease incidence probably resulted from increased stress imposed by a higher moisture requirement of plants with high levels of nitrogen fertilizer and planted at the higher seeding rates. Root and stem disease incidence was reduced by delaying planting until Oct 7 which was probably a result of lower root infection in cooler soils in October than in the warmer soils of September. Development of root and stem rots is known to be favored by plant stress, usually moisture stress.

***Development of Integrated Production Systems for Tomatoes That Provide Stable Phytosanitary Conditions.*** Co-Principal Investigators: E. Lazareva, N. Kharitonov, E. Maslikova- Dnipropetrovsk Agricultural University, Dnipropetrovsk State University; and Sally A. Miller, Ohio State University.

In 1997, late blight was the most common disease of tomato observed. The isolates appear to be similar to one another but different from the strain types normally encountered in Western Europe and the U.S. All strains tested have been sensitive to the fungicide ridomil, and both A1 and A2 mating types were found. Other diseases included early blight (caused by *Alternaria solani*, generally called Macrosporose in Ukraine) and tomato big bud disease. Additional disease assessments, as well as insect and weed evaluations, are being completed in 1998. Fungicide treatments were made during the growing season, but results are not yet available. Late blight did not appear in any of the plots during the growing season. Weather data (temperature, relative humidity and rainfall) were collected and used with the late blight forecasting system Blitecast, which indicated that no infection periods for late blight occurred during the entire season. Tomato seedlings of the varieties Lagidny and Persey were planted in soil with various amendments. Seedlings grown in vermicompost generally weighed more but were not taller than seedlings grown in other mixes. Seedlings were transplanted to the field in May and disease and yield evaluations were made.

***Damage Control of Grain Root Rots.*** Co-Principal Investigators: Valentina Kotsur, Odessa State Agricultural Institute; Lazar T. Babayants, Odessa Breeding and Genetics Institute; and Herman Warren, Virginia Tech.

Over 100 isolates of fungi and bacteria have been identified from soil and infected roots. These isolates will become the source of inoculum for glasshouse studies. Of ten genera of fungi isolated *Fusarium Spp.* *Drechslera Spp.* *Cercospora herpotrichioides* and *Trichothecium roseum* were the most prevalent. *Trichothecium roseum* is being evaluated as a biological control agent for soilborne diseases along with several bacteria. Of the *Fusarium* isolates, *F. oxysporium*, *F. culmorum* and *F. graminearum* were most prevalent. These *Fusarium spp.* are known to produce toxic compound to man and animals. Roots and soil were assayed for pathogenic organisms. *Fusarium propagules* were more prevalent in southern Ukraine, while *Cercospora* and *Drechslera propagules* were most prevalent in northern Ukraine. More than 100 cultivars of winter wheat were evaluated in the field for resistance or tolerance to the major pathogens. Ten cultivars expressed tolerance to the major pathogens and nutrition (macro-elements) when in balance enhanced the resistance.

***Application of the Area-wide Pest Management Concept for the Management of Colorado Potato Beetle,*** *Leptinotarsa decemlineata* (Say), in *Potato*. Co-Principal Investigators: Katerina Yatsoukh, Institute of Agriculture and Stock-Raising of Western Region; and C. Richard Edwards, Purdue University.

Due to the rainy season of 1998, Colorado Potato Beetle (CPB) infestations were not severe, consequently there are no preliminary indications of results from the insecticide resistance evaluation tests this year. Last year's results showed some CPB resistance to selected pesticides. *Phytophthora* and weeds have been the major problem this year, reducing overall yields significantly. In the on-farm trials, the financing to purchase fungicides, and crop rotations seems to have increased production levels. In the host plant resistance study on the institute's test plots, a few varieties showed tolerance for CPB and resistance to *phytophthora*. Publishable findings from the multiple management

strategies study should be available in the coming year.

***Designing a Functional Model for the State Plant Protection Service with Proposed Fee-based Financing.*** Co-Principal Investigators: I.M. Cholovska and Igor Dolinny, L'viv Plant Protection Service; Ed Rajotte and Charlie Pitts, Pennsylvania State University and Keith M. Moore, Virginia Tech.

The Co-PIs have conducted both qualitative and quantitative surveys interviewing Ukrainian plant protection stakeholders regarding IPM programming in several rayons in L'viv Oblast. A draft article analyzing the survey results concluded that: (1) over 50% of the surveyed stakeholders found PPS visits and meetings as “very useful”; (2) individual farmers’ information needs are poorly served by the majority of information sources, and they rely heavily on the mass media and pesticide distributors; (3) the most important influence on full-time individual/private farmers’ decision-making is the advice of pesticide dealers; and (4) that stakeholders would be willing to pay at least nominal sums on a monthly basis for useful pest management information. Individual/private farmers (both full and part-time) are strongly influenced by pesticide dealers and these farmers tend to apply pesticides according to a fixed schedule. A participatory stakeholders’ workshop was held to create a plan for pest management services in L'viv Oblast. Three outputs were achieved: (1) a list of prioritized plant protection information needs; (2) a list of prioritized activities to respond to those expressed needs; (3) an action plan for priority activities. This model is being designed for dissemination throughout Ukraine.

***Development and Introduction of a Guide for an Integrated Pest and Disease Management System for Apple Orchards in the Western Regions of Ukraine.*** Co-Principal Investigators: Zinaida Shestopal, L'viv Branch of the Institute of Horticulture (Ukrainian Science Academy of Agriculture); and Douglas Pfeiffer, Virginia Tech.

Soil-climatic conditions of the Western Region are favorable for apple production. As a result of the reorganization of agricultural production, orchards have been fully transferred to private farmers and individuals. However, climatic conditions of the region also foster the development of fungi diseases and insects which cause large yield losses. In order to prevent losses, farmers often use pesticides despite the fact that they are not well aware of how to use them.. Building on work done at the L'viv Branch of the Horticulture Institute, the Co-Principal Investigators are developing recommendations for IPM Systems in orchards and publishing a guide for farmers and individuals who grow apples.